

SHORTER NOTES

***Salvinia minima* in Arkansas.**—Water spangles, *Salvinia minima* Baker, is reported for the first time from Arkansas. Small populations were found within the Bayou Meto drainage system at four locations in three counties of east-central Arkansas. The diminutive and duckweed-like fern was first noticed in fall 1998; it overwintered through the exceptionally mild winter to spring of 1999, suggesting some winter tolerance or potential ability to persist in this region. No plants exhibited sexual reproductive structures, suggesting that extensive naturalization would be totally dependent upon vegetative expansion and fragmentation, followed by an aided-transport mechanism. It occurs as a rare species of the ubiquitous floating-leaved wetland or aquatic community that is comprised of various combinations and abundances of *Azolla mexicana*, *Lemna* spp., *Spirodella* spp., *Wolffia* spp., and *Wolffiella gladiata*.

VOUCHER SPECIMENS.—U.S.A. **ARKANSAS:** Arkansas Co., T4S R4W Sec. 34, Mill Bayou, N side of U.S. Hwy. 165, 5 mi W of DeWitt, *Peck 9903* (LRU); T5S R6W Sec. 14, Bayou Meto Wildlife Management Area, Grand Cypress Lake, *Peck 99004* (LRU); Lonoke Co., T2N R6W Sec. 7, Buffalo Ditch drainage of Bayou Meto, N side of U.S. Hwy. 165, 1 mi E of Geridge, *Peck 98002* (LRU), *Peck 99001* (LRU); Prairie Co.: T2S R6W Sec. 25, NE edge of Bayou Meto, 3 mi W of Stuttgart, *Peck 99002* (LRU).

The occurrence of *S. minima* in Arkansas is not unexpected. The species grows in coastal plain interior aquatic and wetland habitats from Florida to Texas (Nauman, *Flora of North America, North of Mexico* 2:336–337, 1993; Hatch, *Sida* 16:594, 1995). Natural and/or human-mediated mechanisms played a role in establishing this species in a few of the numerous aquatic and wetland habitats in the Grand Prairie region of Arkansas. This area is a world-class resting and feeding area for an immense number of migratory waterfowl that follow the Mississippi River flyway in autumn and spring. The fern may have been introduced from Louisiana during a spring migration. Alternatively, this area is also an important aquaculture production region with many large, large, field-sized ponds and paddies that produce baitfish, foodfish, crawfish, and rice. In the conduct of those enterprises, the fern may have been introduced unintentionally into Arkansas waters. It might be transported from this region to other states by both mechanisms, as the waterfowl are migratory and great quantities of aquaculture products, such as baitfish and goldfish, are transported alive from Arkansas to all other states where bait-fishing and aquarium fish markets occur. In the future, new locations closer to urban centers may be noted, as *Salvinia* is now commercially available in Arkansas at plant nurseries selling water garden supplies. At this point in time, nowhere in Arkansas has *Salvinia* been noticed in any condition warranting the level of management concern evident in Gulf Coastal states, where complex and costly eradication programs are underway.—JAMES H. PECK, Department of Bi-

ology, University of Arkansas at Little Rock, 2801 S. University Ave., Little Rock, AR 72204.

Two Additional Stations for the Southern Woodfern Hybrid, *Dryopteris* × *australis* in Maryland.—*Dryopteris* × *australis* (W. Palmer) Small was originally listed erroneously for Maryland by Clyde F. Reed (*The ferns and fern allies of Maryland and Delaware including District of Columbia*, Reed Herbarium, Baltimore, 1953). His identifications were based on specimens of *Dryopteris celsa* (Knowlt.) W. Palmer & Pollard from Harford County and northern Virginia. The first valid report of *D.* × *australis* occurred in 1992 by Redman (*Amer. Fern J.* 82:81–82, 1992). Since that time, my continuing studies of *D. celsa* and *D. celsa* hybrid populations have uncovered two additional stations for this rare hybrid.

The first new Maryland population was discovered in May of 1988 by J. Christopher Ludwig, formerly of the Maryland Natural Heritage Program (MNHP), and placed in the program database erroneously as *D. celsa*. In 1993, Gene Cooley, formerly of the MNHP, presented me with the *D. celsa* data from the database for my studies. I visited all stations in the database. My visit to the Ludwig site proved to be a surprise. The ferns had triangular, not deltoid, basal pinna. Chromosome squashes were triploid, with an LLG genomic formula, and a meiotic configuration of 41 bivalents and 41 univalents. This was a second colony of *D.* × *australis* for Maryland. I counted approximately 100 plants in the colony. The site is a small stream bank in a low *Acer rubrum*-*Liriodendron tulipifera* forest along Landing Road in Patapsco Valley State Park in northern Howard County. The closest stations known for the parent species are 0.94 km for *D. celsa* and 510 km for *D. ludoviciana*. Specimens (Redman 5013) have been deposited in the herbaria of Towson University (BALT), the University of Michigan (MICH) and the U.S. National Herbarium (US).

During 1997, I discovered a small colony of wood ferns in an *Acer rubrum*-*Liquidambar styraciflua* alluvial forest bordering the North River along Johns Hopkins Road in northern Anne Arundel County. I first believed these plants, 22 in number, might be *D. celsa* × *cristata*, because *D. cristata* (L.) A. Gray was present at the site. However, the fronds appeared to be too broad for that hybrid and the number of ferns would be unusually large for a *D. celsa* × *cristata* site. Chromosome squashes proved the plants to be *D.* × *australis*. The closest stations known for the parent species are 8.3 km for *D. celsa* and 508 km for *D. ludoviciana*. Specimens (Redman 5102) have been deposited at BALT, MICH, and US.

In summary, three sites for *D.* × *australis* are currently known for Maryland, one in Baltimore County, one in Howard County, and one in Anne Arundel County. Werth et al. (*Castanea* 53:263–271, 1988) report that the total number of sites for this hybrid from throughout its range are in the mid-teens. More sites for *D.* × *australis* are currently known from Maryland than any other state